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OVERINCLUSIVE THINKING IN SCHIZOPHRENIA



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OVERINCLUSIVE THINKING IN SCHIZOPHRENIA

by

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DEDICATION

To my parents, without whom medical school would not
have been possible

To Donna, for her emotional support during this project

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INTRODUCTION

I. The Problem of Definition

Our understanding of "insanity" has followed a circular path. First there were many clinically distinct syndromes, then one unified disease, and now a few, possibly distinct, disease processes similar enough to be classified together. In the early nineteenth century, there existed the categories hebephrenia, catatonia, dementia paranoides, etc., but as early as 1860 Heinrich Neuman felt that there was only one kind of insanity and that this was caused by a "loosening of the togetherness." Kraepelin first publicly suggested that there was an entity characterized by clinical phenomena such as hallucinations, delusions, stereotypies, disordered affect, etc., and most importantly by ultimate deterioration, and called this entity dementia praecox.¹ Bleuler² preferred the label "Schizophrenia". He noted that "the group includes several diseases;" nevertheless, he felt that one primary symptom, "loosening of associations," led to all the secondary manifestations of schizophrenia. Schizophrenics suffer "so complete a fragmentation of the thinking process that they cannot result in a complete idea or action," and their concepts become vague and obscure.

Since Bleuler's classic monograph, "Dementia Praecox or the Group of Schizophrenias"² in 1911, there have been numerous theories about the etiology and the primary defect of schizophrenia. The very fact that there is no universally accepted definition of schizophrenia suggests that schizophrenia is not one

disease but three or four different disorders conveniently grouped under the rubric schizophrenia. To test this possibility, one must look at the essential features of schizophrenia that are called primary symptoms (i.e. are always present).

The most widely accepted primary symptom is that of a thought disorder. A number of concepts about thought disorders can be grouped in three ways: 1. abstract-concrete, 2. logic-paralogic, and 3. overinclusive thinking.³ Considering the wide variety of "ego functions" such as intellect, language, memory, thinking, perception, attention, and reality testing, that may be aberrant in the schizophrenic illness, overinclusive thinking offers a broad and testable definition of one aspect of a thought disorder. The present research represents an attempt to study this aspect of the schizophrenic thought disorder.

II. A Thought Order

Before exploring the evolution of the aspects of a thought disorder, which we label overinclusive thinking, some description of thought order is helpful. Rapaport⁴ maintains that thinking consists of ideas which themselves involve 1. memory, 2. concept formation, and 3. attention-concentration-anticipation.

Memory is the ability to recall to consciousness previously experienced stimuli and the relationship that stimulus had to the organism doing the remembering. It is currently conceived on a chemical basis as being a function of ribonucleic acid and protein synthesis and on a behavioral level as a stimulus-response pattern. The remembered item (the response) is evoked

by the proper stimulus.⁵ The problem of why some things can not be remembered at all has been subject to intensive investigation, is the subject of much of Freudian theory, and is still not completely solved.

Concept formation is more interesting. Objects possess some common quality that sets them off from other objects, and the ability to respond only to this common quality and to ignore differences is the basis of a concept. Since monkeys can recognize "triangularity" and "oddity", language is apparently not necessary for concept formation; but it does make it easier to master. Children find concept formation more difficult than adults. They tend to be specific in their criteria of a concept and need to expand their criteria as they meet new members of the concept. Nevertheless, even for adults, generalization to new concept members is difficult if there is no obvious common quality. If, however, the characteristic is easily discriminated from the other irrelevant characteristics, then generalizations are more likely to occur. Work with word association tests reveals that children tend to respond with words that follow in a sentence (dark-night, deep-hole) while adults use words that have a logical relationship (dark-light, table-chair). This type of word association, and by inference, the type of concept formation seem to be a function of training as well as maturity, since lawyers respond more like other lawyers than like doctors.⁶ Piaget^{7,8} maintains that these maturational changes are due to changes in a biologically determined "internal order". This internal order represents the genetically determined organic material

and its physiologic arrangement in the organism that determines the intellectual capabilities of that organism.

A stimulus is not a stimulus unless the organism registers it; this is as much a function of attention, concentration, and anticipation as of this internal order. The former mechanisms are poorly understood, and physiologic experiments showing the thalamus and midbrain as the sites for these processes are highly controversial.^{9,10}

One can conceive of illness resulting from deficits in any of the above three areas. Memory deficits are prominent in organic brain diseases (e.g. Alzheimer's disease) and fugue and amnestic states. Deficits in attention seem to be prominent in "brain-damaged" children, and excessive distractibility appears to make schizophrenics susceptible to extraneous external stimuli and inner fantasies.¹¹ Rapaport⁴ feels that concept formation is the most vulnerable area of thinking for the reason that while "dynamic psychiatry considers different syndromes to be, in the large part, the results of encroachment of unconscious ideas upon consciousness, and/or a defense against such encroachments", "concept formation [constitutes] one of the main channels through which maladjustment encroaches upon thinking." This type of thinking has led to the persistent use of a variety of specific tests to investigate concept formation. Among these are object sorting tests designed to investigate the thinking processes of various subject populations, especially schizophrenics.

III. The Evolution of a Definition of Overinclusive Thinking

Originally the defect in schizophrenia was considered by

Vigotsky¹² and Kasanin¹³ to be a peeling off of the layers of a developmental hierarchy of cognitive processes. The implication was that a schizophrenic first lost his adult acquired cognitive ability, then his adolescent ability, to be left with only child-like behavior. Norman Cameron¹⁴ likened the schizophrenic defect to a disintegration of the whole cognitive process with fragments of all "layers" persisting in the illness. The resulting thought process was similar to, but not identical to, childish thinking.

In an effort to study a method of communication not contaminated by adult biologic capabilities, Cameron^{15,16} studied the drawings of children and untrained adults. He noted that there had to be a balance between "organismic tendencies" (that inherent organismic conservatism which will lead to the use of the least amount of information necessary to preserve the essentials of an idea for the organism) and social pressures to communicate. A child must learn sufficient pieces of a concept so that the concept may be understood by the listener. From the adults, he noted that "activity abandoned during the course of genetic development tends to remain at a socially less mature level; and if reactivated, it may function at that level, accompanied by appropriately immature asocial attitudes." Implicit is the idea that adults regress to childhood levels only when they have never progressed past that stage. Unless a person never advances past the primitive level of verbalization, he cannot regress to childlike behavior without being contaminated with vestiges of adult behavior.

Intrigued by the similarity of the poor communication seen

in adult drawings and in schizophrenic language, Cameron^{14,17,18} explored schizophrenic thinking. He found it to be characterized by a disjointed and apparently incoherent structure (called scattering) that is also found in otherwise normal persons under conditions of distraction, fatigue, emotional stress, toxemia, and septicemia. He noted that schizophrenics used an approximate substitute term or phrase when confronted with sentence fragments, yielded loose clusters of terms, and failed to provide adequate explicit connecting links (asyndesis). The latter behavior is not unlike his child and adult populations' when they were asked to draw simple scenes. The patients with senile brain syndromes were definitely superior to the schizophrenics with a remarkable preservation of general social function. The schizophrenics seemed to miss rather than evade points as did the "seniles", who were rarely asyndetic. Neither group yielded material like normal children. From this same material Cameron defined another new concept, overinclusive thinking which is an incapacity for selecting, restricting, and elimination; in other words, a problem in maintaining boundaries around concepts. Contradictory, competing and irrelevant reactions prevent logical thinking and result in cluster thinking with its loose organization and use of unprecise approximations. Possibly the surfeit of "related" material makes it impossible to provide the necessary links to all the material. Working with the Hanfmann-Kasanin¹⁹ test designed to build concepts with the tester's help, Cameron found that his schizophrenics were quite capable of generalizing, albeit not always correctly or successfully. This finding was

in contrast to the findings of Benjamin²⁰, Vigotsky¹², and Goldstein²¹ that schizophrenics were unable to abstract or generalize, but were concrete. Nevertheless, the schizophrenic's most striking feature was his overinclusive thinking. Payne²² later answered this dichotomy by noting that Benjamin, Vigotsky, and Goldstein were using any abnormal concept as evidence of concreteness. Unusual concepts or the unusual interpretation of words, now considered representative of overinclusive thinking, or other strange or bizarre features, were then called concrete. By the late 1930's and early 1940's, Cameron was certain that overinclusive thinking was a particular characteristic of schizophrenia.

IV. Studies in Overinclusive Thinking

The fact that a number of schizophrenic patients related experiences suggestive of this phenomenon of overinclusive thinking^a prompted Rapaport to evaluate Cameron's ideas during his very thorough investigation of the cognitive process. Using the Goldstein-Scheerer Object Sorting Test (GS-OST), he examined active sorting and passive sorting. For the former the subject is given one object and is required to decide on a concept and select the other items in that concept in addition to the given object. He is then required to verbalize the definition of his concept (active concept).

a- For example Norma MacDonald²³ reported "the exaggerated state of awareness in which I lived before, during, and after my acute illness. At first it was as if parts of my brain 'awoke' which had been dormant, and I became interested in a wide assortment of people, events, places, and ideas."

For passive sorting, the group of objects is given and the subject is asked to define a concept that includes all but only those items (passive concept). From this test he derived a scoring system that measures: 1. vague and generalized definitions, 2. chain definitions, 3. looseness of the concept span, 4. adequacy of sorting and verbalization, 5. symbolic definitions, 6. fabulated definitions, and 7. conceptual level of definition, from concrete to functional to abstract. Measures one through three are similar to this study's definition of conceptual overinclusion, measures four through six are similar to this study's definition of idiosyncratic thinking, and measure seven is similar to this study's definition of richness of association. (See the methods section for a more complete description of this study's scoring system.) Rapaport found that looseness of the concept span was the most important measure. He defined "essential looseness" (L) as the inclusion of objects together such that they do not belong together. For example, an L was given when "you pick things up with both" was used as the conceptual grouping of the fork and pliers. This concept is significantly worse than a grouping in which the concept must be stretched to accept an additional member but which is not completely unacceptable. His results show that active concept formation suffers first and the most from maladjustment. Chronicity and deterioration in schizophrenics and depression are the three most potent factors in leading to inadequacy of concept formation.⁴ More than one L for anyone over eight years of age is abnormal. The presence of an L indicated a schizoid personality, with adjusted

schizoid personalities having more L's than the preschizophrenics who had more than the paranoid and unclassified schizophrenics. Three or more L's were rare except in schizophrenia. Milder forms of looseness would result from anxiety or depressive trends, probably from a decrease in attention. The above three groups also tended to have more vague and generalized definitions (syncretistic definitions) but these definitions were useful only when clustered and with L's. This indicated early schizophrenia. Chain definitions were very rare but were almost exclusively from schizophrenics.⁴

The results indicate that looseness of the conceptual span is not exclusively a schizophrenic trait, since nonschizophrenics may be loose because of anxiety or depressive traits. It is apparent that not all schizophrenics are loose. There is a trend among schizophrenics and schizoid personalities for a relationship in which the less severe the maladjustment, the more loose the subject. Rapaport found primarily looseness of concept span, syncretistic definitions, and less importantly, symbolic and fabulated definitions to be present in significant amounts in 35% of 53 schizophrenics and schizoid normals, but in only 2% of 107 depressives, neurotics, and nonschizoid normals.⁴

Lovibond²⁴ repeated some of Rapaport's work using the same sorting test with eight categories that had three levels of abnormal responses in each. These categories were 1. syncretistic definition, 2. fabulated definition, 3. arbitrary definition, 4. inessential relationships, 5. personal association, 6. impersonal association, 7. symbolic definition

and 8. chain definitions. Of the responses, 75% were syncretistic, symbolic or fabulatory definitions. A score of six or less included 91% of the normals and only 34% of the schizophrenics, and the test score correlated well with a clinical estimation of impairment, ($p < .001$). Of note is the recurrence of normal scoring schizophrenics as well as high scoring schizophrenics. Lovibond could not tell if there were two groups of schizophrenics or if the error were just a matter of degree.

Payne²⁵ began a systematic study of overinclusive thinking and noted at the beginning that some schizophrenics scored as high as normals on tests of intellectual and motor ability, but as a group they tended to do worse than the normals. He administered 22 tests to 20 normals, 20 neurotics, 20 "acute" schizophrenics, and 20 depressives. Of 59 indices derived from these tests, six showed differences between the schizophrenics and nonschizophrenics at the $p < .05$ level or better. By choosing those indices on which schizophrenics performed poorly, Payne defined a factor that separated schizophrenics from other psychotics and from nonschizophrenics. This selection process practically guarantees that for his subjects only schizophrenics will score abnormally high on his measures of schizophrenic pathology, which he labeled overinclusive thinking. Among these six tests were the number of words used to answer the Benjamin Proverbs test, the number of objects sorted on part I of the GS-OST, and the number of appropriate versus inappropriate responses to the Object

Classification test. From this and subsequent studies using various types of schizophrenic populations, Payne and his coworkers felt they could draw the following conclusions:

1. The factor he labeled overinclusive thinking is found only in schizophrenia.²⁶
2. Only about one-half of the schizophrenics are over-inclusive.²⁷
3. Overinclusive thinking is relatively independent of generalized retardation.²⁷
4. Chronic schizophrenics are "practically all within normal range."²⁸
5. Schizophrenics are not abnormally overinclusive in remission. ("Symptom-free" schizophrenics were compared to symptomatic schizophrenics.)²⁹
6. In regards to changes over time for chronic schizophrenics, some had more overinclusive thinking and some had less overinclusive thinking with the passage of time.²⁸
7. Deluded schizophrenics had more overinclusive thinking than nondeluded schizophrenics who had more than non-schizophrenics. ($F = 4.76$, $p < .05$) (If one controls for schizophrenia, the significance disappears.)³⁰
8. There is a tendency for those schizophrenics who are overinclusive and less retarded to have ideas of reference and paranoid ideation.³¹

It is obvious in studies of overinclusive thinking that strict identification of the patient population is crucial. As an example, Epstein³² and Schwartz³³ each administered Epstein's word association test (e.g., MAN: arms, shoes, hat, toes, head, none) which required the subject to underline the words that go with the test word (MAN). Epstein found that chronic schizophrenics were significantly more overinclusive than the normals and that the schizophrenics tended to chose neologisms and words related to material things and sense impressions. Sixty-three per cent of the schizophrenics and only 22% of the normals scored 18 or more on overinclusion. Schwartz chose schizophrenic subjects with no confusion, disorientation, delusions or hallucinations, severe depression,

or anxiety. (One wonders how the diagnosis was made.) He found no significant differences between the schizophrenic and normal subjects. Two investigators have obtained conflicting results, and these conflicting results are probably due to their using different types of patient samples.

While Payne's work is stimulating, it must be noted with reservations. Goldstein³⁴ attempted to repeat Payne's³⁰ work but found that acutely admitted schizophrenics did not differ significantly in overinclusion when deluded or nondeluded. Lloyd³⁵ studied Payne's³⁰ original data and concluded that the relationship of overinclusive thinking to delusions was significant only when normals were included in the comparison. Her own data suggest that the relationship is present nevertheless. Other problems with Payne's data are the ill-defined nature of his patient populations and his lack of use of acute psychotics in some of his studies.

Lloyd raises a more serious theoretical question when she notes that a word count on proverbs response is far removed from overinclusive thinking. Many things affect verbalization. Even Payne's work suggests that overinclusion is a complex factor not represented by a single test. One might note that the total number of objects sorted on the CS-OST is also a function of richness, retardation, and bizarreness, among others, besides overinclusive thinking. Nowhere does Payne include qualitative measures of overinclusive thinking. While less precise, they may be more accurately measuring overinclusive thinking. It would seem worthwhile in assessing

overinclusive thinking to use a qualitative as well as quantitative measure. Therefore, the present study includes a qualitative estimation of the degree of overinclusive thinking exhibited by the subject.

V. Overinclusive Thinking as a Function of Diagnosis

Other workers have attempted to correlate the schizophrenic thought disorder with the more classical classifications of schizophrenia. Silverman^{36,37,38}, working with perception tests, seems to indicate that paranoids are more field-dependent than nonparanoids, at least in the acute stage, and that process schizophrenics are less field-dependent. Overinclusion, if it can tentatively be related to field-dependence, as measured by perceptual tests, decreases with chronicity but quite confusingly, Silverman states that "it is presumed that a necessary condition for a schizophrenic behavior pattern to exist is a state of a reduced influx of environmental input." Having hypothesized that schizophrenics adapt to increased stimuli by reducing their attention levels, is he saying that one does not see schizophrenic symptoms until the patient is already chronic?

Tutko and Spence³⁹ reported that process schizophrenics behaved more like "brain injured" patients when they could not specify a common property to the groups in part II of the GS-OST; reactives tended to respond with vague, broad, or idiosyncratic categories. What may be happening is that process schizophrenics, as defined by poor pre-morbid function, are chronic when they reach a test situation and would thus

have adapted to their overinclusion by withdrawing and reducing their attention levels. On the other hand, paranoids may be those schizophrenics that respond to overinclusive thinking by establishing elaborate delusional systems and find that overinclusive thinking has become a good "self-defense".

VI. Does Overinclusion Equal Overinclusive Thinking Plus Stimulus Overinclusion?

Some workers have suggested that overinclusion results from a bombardment of external stimuli rather than an inability to sort out thoughts. The former might be called stimulus overinclusion and the latter overinclusive thinking.³ The concept of stimulus overinclusion derives from reports by schizophrenics that they had to attend to the minutest details,⁴¹ and tests were derived to measure a subject's field-dependence,⁴² "stimulus augmentation",⁴³ and "perceptual experience",⁴⁴ among others. Schizophrenics tended to be either very field-dependent or very field-independent. These may be chronic and acute patients, respectively.⁴³ Paranoid schizophrenics tended to overestimate significantly the intensity of input stimuli, as measured by a kinesthetic after-effects test. Stilson and Kopell⁴² tested the ability of schizophrenics, nonschizophrenic psychiatric patients, and normals to identify shapes without and with "visual noise". Without noise, all three groups performed equally well, but with noise the schizophrenics performed worse than nonschizophrenics who were less adept than the normals. A list of first-person statements developed by Tucker et al,⁴⁴ was

designed to explore common schizophrenic experiences that were considered to represent stimulus overinclusion. No diagnostic group was significantly different, but the "Perceptual Experience Inventory" (PEI) was closely related to trait anxiety.⁴⁴ In unpublished studies³, the PEI, felt to assess stimulus overinclusion, did not relate to overinclusion scores on the GS-OST. Because acute schizophrenics did poorly when confronted with the Ishihara Pseudo-Isochromatic Plates for Color Perception, Bemporard⁴⁵ concludes that schizophrenia may involve a perception of the parts rather than the whole.

From these and other studies^{31,46}, it appears that there is a factor of stimulus overinclusion that may or may not be related to overinclusive thinking. From the available data, it is not possible to tell if these are mutually exclusive or different behavior representations of the same defect.

VII. A Physiologic Basis of Overinclusive Thinking

Overinclusive thinking can be physiologically defined in terms of the generalities currently known about the human nervous system. Speculatively, one can imagine a system in the reticular activating system (RAS) that filters incoming sensations from the peripheral nervous system (PNS) or the central nervous system (CNS) to select those items necessary for the task at hand. If for some reason, such as amphetamine or possibly a "schizophrenia intoxication", this filter system should fail, the cortical level (consciousness) is overwhelmed by information that, while always present, normally does not reach the cortex. What appears then would be

clinically apparent as a hyperawareness, such as is seen in some paranoid schizophrenics who note the smallest details, or psychometrically apparent as overinclusive thinking. It may be that stimulus overinclusion is the failure of the filter to select the proper amounts of external input through the PNS, whereas overinclusive thinking may be the failure to filter CNS stimuli.

Levin^{47,48} noted that bromide intoxication can produce symptoms strongly reminiscent of schizophrenia. He does point out that one can not always rule out a preexisting psychosis. Ellingwood⁴⁹ does not describe a formal thought disorder in his study of amphetamine psychosis but does report patients who described the linking of everything together. One stated that "I began to put details together from the past and the present."

Alternatively, Fish⁵⁰ hypothesizes that the RAS may become overactive by degrees. Very mild hyperactivity would result in the onset of anxiety or depression with the feeling of loss of freedom. Next, and most importantly, is the inclusion of external stimuli that ordinarily are registered only subliminally. Further activation leads to excitation of subliminal central processes. Fish implies that while the former always comes first, the presence of the latter does not preclude the former. He further hypothesizes that these central processes run in parallel to normal thought and can become self-reinforcing through reverberatory circuits between cortical association areas and the subcortical nuclei;

consequently, a temporary increase in RAS activity can result in a permanent thought disorder, i.e. chronic schizophrenia. In support of his thesis, he notes that amphetamines have been shown to increase arousal similar to RAS stimulation as recorded by electroencephalogram. Some evidence exists that chlorpromazine may decrease RAS activity. RAS hyperactivity can result from intoxication, a metabolic defect, or a cortical or RAS lesion. Unfortunately, there is no conclusive evidence for the consistent presence of any of these three states in the schizophrenic illness.⁵¹

Storms and Broen⁵² have proposed a theory based on three concepts: 1. that the many responses to a stimulus are found in a hierarchy (response hierarchy) according to their tendency to occur, 2. that increased arousal leads to increased strength of all coexisting response tendencies, and 3. that there is a ceiling of strength beyond which a response cannot be raised. A schizophrenic would be hypothesized to have an enduring tendency toward a lower ceiling than normals, causing him to have a number of responses raised to maximum levels by ordinary levels of arousal. These responses are now equally likely to occur. With a normal ceiling, a great deal of arousal could still cause a number of responses to be at maximum strength and produce related, but inappropriate, responses to stimuli. If arousal can be equated with situational anxiety, then those subjects most anxious would also be most overinclusive (vague, loose, imprecise). They go on to explore how the theory explains many other secondary

symptoms of schizophrenia and use it to recommend specific types of behavior therapy for schizophrenics.

VIII. Summary of Theories of Overinclusive Thinking

Cameron¹⁷ felt that overinclusive thinking was a problem in maintaining boundaries, with the resulting incapacity for selecting, restricting, and eliminating. Shakow⁵³ described schizophrenics as being unable "to maintain a major set." By this he meant a "difficulty in keeping up a state of readiness for response to coming stimuli, the state which facilitates the optimal response called for by a given situation." Epstein³² hypothesized an "attention defect", since the overinclusion score was somewhat positively correlated with disorganization. To integrate his findings into a theory of schizophrenia, Payne³¹ suggested that there are at least three, and possibly four, subtypes of schizophrenia. The first includes those that are moderately retarded; the second, those that are severely retarded, including most chronic psychotic patients diagnosed schizophrenics; and the third, those that exhibit overinclusive thinking due to a breakdown in a "filter mechanism." These last include less than one-half of all those diagnosed acute schizophrenics, those patients who tend to have paranoid delusions and ideas of reference, and those who tend to be excitable and overactive. The fourth group may be those patients with overinclusive perception, or the inability to exclude irrelevant perceptual material from consciousness. (See also Tucker, Silverman, Stilson and Kopell, and Bemporad above.)

IX. Overview

There is a general consensus that such a thing as overinclusive thinking exists, but it is difficult to define its relationship to schizophrenia. The major problems involve large variations in patient samples and a wide number of tests. In very few of the studies are the defining characteristics of schizophrenia clearly stated and it is often impossible to be sure that "acute" schizophrenics are really acute. The many ways of operationally defining schizophrenia along with the many tests of overinclusive thinking make it difficult to know if each of the tests is measuring the same thought process. Do total number of words used to respond to proverbs really measure a thought disorder, or can a blatant schizophrenic cope with a relatively simple and rote problem but become "loose, vague, and idiosyncratic" when confronted with a new experience? With these reservations, one can construct a list of the more important findings about overinclusive thinking.

1. From one-third to one-half of schizophrenics are significantly more overinclusive and bizarre than nonschizophrenics.^{4,24,27}
2. Not all schizophrenics are overinclusive.^{4,27}
3. A measure of overinclusive thinking and bizarreness correlated well with a clinical estimation of impairment.²⁴
4. Indirect measurements point to the fact that overinclusive thinking is a function of acuteness of onset of the illness.^{14,29,39}
5. Overinclusive thinking is related to delusions.^{30,35}
6. The presence of overinclusive thinking indicates a good prognosis.³¹

More controversial is the statement that only schizophrenics are overinclusive²⁶ which is not supported by others.^{4,32}, who found that anxiety and depressive tendencies could lead

to loose and vague sortings. There also appears to be a factor called stimulus overinclusion that is separate from overinclusive thinking and represents an overabundance of incoming stimuli.⁴⁴

This study will investigate the hypothesis that overinclusive thinking is a stable characteristic and therefore is more likely to be a "basic" defect of schizophrenia. The schizophrenic thought disorder, as measured by part I of the GS-Ost, will be followed in the same subjects over a fixed time period. Should the test scores remain stable, one could conclude that for some patients the thought disorder was a permanent, unique thinking process. If these scores decrease with recovery from the acute illness, then the thought disorder is more likely a symptom, probably secondary to a more basic "disorganizing" process. Should scores fluctuate randomly then it would appear that our test is not measuring any basic cognitive function. To prevent marked variations in follow-up health from affecting these relationships, the follow-up scores will be compared to measures of social function and symptom level.

A measure of stimulus overinclusion, an abbreviated form of the Perceptual Experience Inventory, will be used to test the hypothesis that overinclusive thinking and stimulus overinclusion are related representations of one central nervous system defect. A high correlation between overinclusive thinking and stimulus overinclusion would support this hypothesis.

The physiologic theories of Fish and of Storm and Broen both suggest that either stimulus overinclusion or over-inclusive thinking would be associated with higher levels of anxiety, if anxiety can be equated with arousal. This hypothesis will be tested for trait anxiety.

In sum, the present research is designed to investigate the following three specific questions.

- 1) Is overinclusive thinking a stable feature of the illness for some schizophrenics, and therefore possibly a basic defect in the illness?
- 2) Is stimulus overinclusion related to conceptual overinclusion?
- 3) Does trait anxiety lead to higher conceptual over-inclusion or stimulus overinclusion scores?

METHODS

I. Sample Selection

The subject sample was selected from all admissions to the Psychiatric Inpatient Division of Yale-New Haven Hospital.⁵⁸ The patient population of this service includes the major types of psychiatric disorders necessitating hospitalization (primarily depressives, schizophrenics and character disorders). The unit emphasizes milieu, group, and family treatment, with frequent use of ataractic medications. The primary goal of the ward is the rapid return of the patient to the community with a reduction of symptom level and the restoration of the ability to function in the family, with peers, and at work. Consequently, a disorder may not necessarily disappear at discharge but be appropriately controlled.

To be included in the sample, a subject had to have a diagnosis of latent schizophrenia (pseudoneurotic, borderline, etc.), classical schizophrenia (acute undifferentiated, catatonic, schizoaffective, acute exacerbation of chronic schizophrenia, etc.), psychotic depression, neurotic depression, or character disorder (including alcohol and drug addiction). Diagnoses excluded because of the small number of subjects in each category were organic brain syndrome, epilepsy, manic-depressive reaction - manic type, and anorexia nervosa. The diagnosis of each patient was arrived at according to the criteria in the American Psychiatric Association Diagnostic Manual⁵⁹ by a psychiatrist with six years experience and a

clinical psychologist with eight years of experience. Neither was involved in the data collection. Psychological testing was not used in the establishment of the diagnosis to avoid the circularity which can occur when psychological tests are used to determine the diagnosis and then are evaluated by diagnostic categories. Another criterion for selection was that the patient had been administered the Goldstein-Scheerer Object Sorting Test (GS-OST) during the first ten days of hospitalization. Finally the subject had to have been out of Yale-New Haven Hospital for at least six months.

Information about previous hospitalization and acute-ness of onset of illness was obtained from the subjects old chart. Diagnostic groups were not strictly matched for demographic variables (age, sex, marriage, schooling, etc.) since each subject was to serve as his own control. In addition, statistical tests were conducted within each diagnostic group to determine whether age influenced the results. These tests suggested that age did not influence the results.

Of 201 admissions between 15 July 1968 and 17 October 1969, 118 (59%) were administered an initial GS-OST. Thirteen (11%) did not fit the diagnostic criteria for selection, 15 (13%) could not be contacted, usually because they were not originally from Connecticut or had moved from the state, and 2 (1.7%) had died (both from physical illness). Fifteen (17% of those contacted) refused to be interviewed. These

last 32 subjects included four latent schizophrenics, eight classical schizophrenics, seven psychotic depressives, eleven character disorders, and two neurotic depressives. One psychotic depressive, three classical schizophrenics, and one addict were known to have spent some time since discharge in a therapeutic setting. The remaining 74 subjects were seen for this study (52) and for another study (22). Letters were sent arranging an appointment to be confirmed or changed by telephone contact. (Appendix A)

The average age was 28.9 years, and 35% were male. One-half had some schooling beyond high school and one-fifth finished college. The nonschizophrenics were significantly older than the schizophrenics, primarily because all seven psychotic depressives were over 45 years of age. Neither group was significantly different in sex, educational level, or number of previous hospitalizations. The classical schizophrenics did spend significantly more time in the hospital. The characteristics of the study group are listed in Table I.

II. The Goldstein-Scheerer Object Sorting Test

The first part of the GS-OST⁶¹ was used to evaluate the subjects' sorting (conceptual) behavior. The test material consists of 35 small objects that are selected to provide opportunities for constructing a variety of categories. (See Appendix B for a complete list of the objects.) Seven objects were used to offer the subject ample opportunity to demonstrate pathological behavior. These were the sink

TABLE I

Characteristics of the Study Group

	Latent Schizophrenics 15 (29%)	Classical Schizophrenics 15 (29%)	Non- schizophrenics 22 (42%)
Number			
Diagnosis:			
Character Disorders			9 (41%)
Neurotic Depressives			6 (27%)
Psychotic Depressives			7 (32%)
Age:			
13-19 years	53%	53%	18%
20-29	33%	27%	9%
30-39	7%	13%	18%
40-60	7%	7%	55%
mean*	22.2 years	22.3 years	38.0 years
Sex:			
Male	33%	33%	36%
Female	67%	67%	64%
Marriage:			
Ever married	40%	27%	73%
Never married	60%	73%	27%
Education:			
Less than high school--	7%	7%	0%
Some high school--	33%	33%	23%
High school graduate--	20%	20%	18%
Some beyond high school--	33%	27%	23%
College graduate--	0%	0%	18%
Some beyond College--	7%	13%	19%

* $t=5.24$ $p < .001$ schizophrenics vs nonschizophrenics

TABLE I (continued)

	Latent Schizophrenics	Classical Schizophrenics	Non- schizophrenics
Number of Previous Hospitalizations:			
0	67%	73%	63%
1	13%	13%	23%
2	13%	7%	0%
3 or more	7%	7%	14%
mean	.93 hosp.	.53 hosp.	.73 hosp.
Number of Weeks in the Hospital:			
Less than 4	7%	0%	0%
4-8	7%	13%	36%
9-12	33%	0%	32%
13-17	33%	40%	23%
More than 17	20%	47%	9%
mean**	12.6 weeks	18.0	11.3 weeks

** $t=3.32$ $p < .005$ classical schizophrenics vs
latent schizophrenics
 $t=2.30$ $p < .05$ schizophrenics vs nonschizophrenics

stopper, the fork, the pipe, the bicycle bell, the red paper circle, the pliers, and the red rubber ball. For each of these seven starting objects, the subject was asked to select from the remaining 34 objects those items that "belong with" or are "associated with" the starting object. He was told that there are no right or wrong answers, that he could choose from none to all of the objects and that he should indicate when he was through choosing. He was then asked why he selected the objects he chose, and if appropriate, why he left out items belonging in his category.

Our test rates the subject in four areas: 1. total number of objects sorted (behavioral overinclusion), 2. conceptual overinclusion, 3. idiosyncratic thinking and behavior, and 4. richness of associations. Briefly, conceptual overinclusion is operationally defined by four criteria: a) using several dimensions of the original starting object without seeming to recognize that each dimension is discrete, b) arbitrarily changing starting points ("chaining"), c) using a vague, distantly related concept as a categorizing principle, and d) attempting to force fit an object into the chosen dimension of the starting point which does not really belong in that dimension. Idiosyncratic thinking consists of a) reference to personal experience, b) use of dimensions of the starting object understandable only to the subject, and c) inappropriate or strange behavior towards the test or tester. Richness of associations is a) the use of rarely used discrete dimensions of the starting point, b) the consistent

recognition of the multiple categories possible around a single starting object; c) the use of abstract dimensions for all seven starting points and d) the choice in an original and appropriate way of a remaining object according to the selected categorizing principle. Each of the last three measures are scored on a 1 to 5 scale with 5 being the most and 1 being the least. They are described more fully in the excerpt from the scoring manual (Appendix C).

The time of the first GS-OST, the first ten days of hospitalization, will be called the first time period (TP1). The follow-up GS-OST will be considered in the third time period (TP3). Since some subjects had the GS-OST administered during the seventh week of hospitalization as well, this will be known as the second time period (TP2).

To insure that scores obtained at TP3 were comparable to TP1 scores, the author learned to score from the original tester and then did a reliability study with that tester, using 18 recently admitted patients on the Psychiatric Inpatient Division. The product-moment correlations of $r=.89$ for the index of conceptual overinclusion, $r=.93$ for the index of idiosyncratic thinking, and $r=.79$ for the index of rich associations indicate that satisfactory inter-rater reliability was achieved.

III. Follow-up Evaluation

At the time of follow-up the author first interviewed the subject with the purposes of making the subject feel at ease and of filling out a questionnaire that evaluated

health, work function, and social function.⁶² This was derived from questions used by Freeman and Simmons⁶³ and from personal experience by the Division psychologist.⁶⁴ (Appendix D) Items related to "health" measured the continued use of psychiatric support, the subjective impression of an improved or stable course of illness, and most importantly, any subsequent rehospitalization. Work function required three different different sections of questions because of the variety of acceptable roles. Men usually held jobs and were judged by job changes, standard of living changes, per cent of household income, and a feeling of economic security. Women could be housewives and/or job holders, the latter affecting the proficiency expected on the former. Teenagers and young adults were often in school and were evaluated according to whether they carried a normal course load, did well on grades, and related well to teachers and classmates. Social function was a measure of the amount of personal activity in terms of sparetime, the degree of contact with friends and clubs, and satisfaction with family life. In all categories, stability or improvement in function compared to three years before admission and definite improvement compared to the period just before admission were rated as signs of good function.

The subject then filled in a short symptom questionnaire that measured psychoticism, delusions, depression, stimulus overinclusion, nervousness, emotionality, withdrawal, and overinclusive thinking. (See Appendix E for the questionnaire, its scoring, and its derivation.) While the subject was

thus engaged, the author rated the subject for "mental health status" (MHS). There are five categories in this rating scale:

1. Not functioning - rehospitalized or completely isolated and dependent on family
2. Inadequate function - no friends, near loss of controll over life situation
3. Marginal function - a few friends, dates rarely or maintains a family, isolated but self supporting
4. Good function - friends, self supporting or good in school, positive outlook on life
5. Excellent function - no outwardly detectable difficulty

While the first four categories are based almost exclusively on function, the difference between a 4 and a 5 is usually based on how the subject may have been feeling near the time of the interview. For example, someone who had a good job, met with friends often, but who felt somewhat depressed or felt mildly concerned that old problems would crop up again, would score a 4 rather than a 5.

Finally the GS-OST was administered.

Because a second researcher became involved part-way through the data collection, the symptom questionnaire was expanded slightly and the Rorschach ink-blot test was administered after the GS-OST.

IV. Statistics⁶⁵

The Pearson product-moment correlation was used to determine relations between different parameters. The Student t-test analyzed the differences between mean scores in the same parameter unless Chi-square was more appropriate.

RESULTS

I. Health at Follow-up

Because discharge from the hospital does not mean the arrival of the patient at some fixed state of health nor the maintenance of that health until follow-up, a measure of the subject's health as measured by symptoms and social function was attempted. Our findings are summarized in Table II.

A total score based on the sum of the components of the structured interview correlated highly ($r = -.78$, $p < .005$) with the MHS, indicating that these two rating scales were accurately reflecting the interpersonal relationships and social function of the subjects. Also supporting the usefulness of the MHS is the fact that it produced the expected variation of post-hospital function among the diagnostic categories. The classical schizophrenics functioned significantly worse than the nonschizophrenics while the latent schizophrenics performed at a level between the other two groups. The high level of function attained by the nonschizophrenics could not be attributed to their age alone, since the MHS scores did not correlate with the subjects' age ($r = .17$) among the diagnostic groups. Many of the schizophrenics were able to hold good jobs or be full time students and even more felt their mental health to be improved from the time of their acute illness. Their major difficulty was their inability or reluctance to relate to other persons. For the nonschizophrenics, instances of poor health or work

TABLE II

Symptom Scores at Follow-up

Diagnosis	Latent Schiz	Class Schiz	All Schiz	Psych Depr	Neur Depr	Chara Disord	All Nonschiz
Number	15	15	30	7	6	9	22
MHS							
poor:1-3	33%	53%	43%	14%	17%	13%	14%
good:4-5	67%	47%	57%	86%	83%	87%	86%
mean ^a	3.37	3.20	3.46	4.43	4.00	4.25	4.24
Psychoticism							
none:0-2	7%	13%	11%	100%	50%	22%	55%
some:3-19 ^b	93%	87%	89%	0%	50%	78%	45%
mean ^b	4.67	6.75	5.70	1.28	4.33	4.44	3.41
Delusions							
none:0-1	20%	20%	20%	36%	50%	44%	59%
some:2-18 ^c	80%	80%	80%	14%	50%	56%	41%
mean ^c	3.33	5.13	4.23	0.43	3.33	2.44	2.05
Depression							
none or mild: 0-2	40%	33%	37%	43%	67%	55%	55%
mod. or severe 3-6 ^d	60%	67%	63%	57%	33%	45%	45%
mean ^d	3.20	3.80	3.50	2.71	2.17	2.11	2.32
Trait Anxiety ^e							
mild:0-3	27%	27%	27%	29%	17%	56%	36%
mod.:4-7	53%	53%	53%	42%	66%	33%	46%
severe:8-10	20%	20%	20%	29%	17%	11%	18%
mean	4.93	4.93	4.93	5.43	5.00	2.78	4.23

a $t=3.769$ $p < .001$
 $t=2.631$ $p < .02$

class schiz vs all nonschiz
all schiz vs all nonschiz

b $t=2.603$ $p < .02$

all schiz vs all nonschiz

c $t=2.511$ $p < .02$

all schiz vs all nonschiz

d $t=2.322$ $p < .025$

all schiz vs all nonschiz

e Trait Anxiety = Emotionality + Nervousness

function were rare and poor socialization only slightly less so.

The schizophrenics were significantly more deluded, psychotic and depressed than the nonschizophrenics.. Foulds⁶⁶ reported that interview forms of his delusional and psychotic-neurotic scales were excellent diagnostic tools in that 70% of his nonpsychotic subjects had scores less than the median for the total sample, while only 26% of the psychotics did so. Our pencil and paper form of these same scales showed that 68% of the nonschizophrenics, including seven psychotic depressives, had scores lower than the median while only 33% of the schizophrenics did so. Interestingly, the psychotic depressives were less psychotic and less deluded than any other group, and less depressed than the schizophrenics.. The character disorders exhibited the least amount of trait anxiety while all the other groups had moderately high and approximately equal levels of anxiety. By definition, the character disorder's behavior is more a problem to others than to himself; whereas the psychotics and neurotics are more troubled by their own ego-alien behavior. The character disorder would not respond to social pressures with anxiety.

While the schizophrenics are clearly less healthy than the nonschizophrenic subjects, no one symptom is outstanding, but all the symptoms are found more frequently in the schizophrenic subjects. It is the present investigator's view that perhaps this is a counterpart to the clinical experience of confronting a patient and feeling that this patient has

a schizophrenic illness but without knowing, sometimes, what the exact reason for that impression.

II. Behavioral Overinclusion

The nonschizophrenics scored higher in this measure than did the schizophrenics. Both groups sorted more objects at TP3 than at TP1. Neither the differences between the schizophrenics and the nonschizophrenics at TP1 and TP3, nor the changes in each group from TP1 to TP3 were significant. Neither TP1 scores ($r=.11$) nor TP3 scores ($r=.11$) correlated with MHS scores. (Table III)

III. Richness of Associations

There was a marked decrease in the amount of originality and unusualness that all groups had shown in the hospital. There was a tendency to require a higher level of uniqueness and originality from subjects at TP3 than at TP1 in order for them to score as being rich; nevertheless, few subjects used rich sortings. (Table IV)

IV. Conceptual Overinclusion

From his experience with the GS-OST, this investigator felt that a score of 3, 4, or 5 was definitely abnormal and that a score of 1, and probably 2, was not overinclusive. The results are summarized in Tables V - VII and Figure I. The significant differences between schizophrenics and nonschizophrenics at TP1 have disappeared by TP3, and many were changed by TP2. The overall trend was to find the latent schizophrenics improving markedly, the classical schizophrenics less so, and the nonschizophrenics becoming as

TABLE III

Mean Behavioral Overinclusion Scores for the Three
Time Periods

Diagnosis	TP1		TP2		TP3	
	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>
Latent Schiz	44.26	15	41.63	11	48.66	15
Classical Schiz	35.66	15	37.23	13	47.33	15
All Schiz	39.97	30	39.25	24	47.67	30
Psychotic Depr	45.28	7	54.00	5	63.71	7
Character Disord Neurotic Depr	44.73	15	53.42	7	58.46	15
All Nonschiz	44.91	22	53.66	12	60.14	22

Schiz vs nonschiz TP1, p not significant (N.S.)

Schiz vs nonschiz TP3, p N.S.

TP1 vs TP3 schiz, p N.S.

TP1 vs TP3 nonschiz, p N.S.

TABLE IV

Mean Richness of Association Scores for the Three
Time Periods

Diagnosis	TP1		TP2		TP3	
	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>
Latent Schiz	2.40	15	2.18	11	1.43	15
Classical Schiz	2.00	15	1.53	13	1.66	15
All Schiz	2.20	30	1.83	24	1.60	30
Psychotic Depr	1.57	7	1.40	5	1.71	7
Character Disord	2.07	15	1.29	7	1.33	15
Neurotic Depr						
All Nonschiz	1.91	22	1.33	12	1.45	22

Schiz vs nonschiz TP1, p N.S.

Schiz vs nonschiz TP3, p N.S.

TP1 vs TP3 schiz, p N.S.

TP1 vs TP3 nonschiz, p N.S.

TABLE V

Mean Conceptual Overinclusion Scores for the Three Time Periods

Diagnosis	TP1		TP2		TP3	
	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>
Latent Schiz	2.53	15	2.54	11	1.67	15
Classical Schiz	2.73	15	2.31	13	2.13	15
All Schiz	2.63	30	2.41	24	1.90	30
Psychotic Depr	1.29	7	2.00	5	2.29	7
Character Disord Neurotic Depr	1.67	15	1.57	7	2.27	15
All Nonschiz	1.55	22	1.75	12	2.27	22

$t=2.25$ $p<.05$ TP1, schiz vs nonschiz
 $t=0.44$ $p>.30$ TP3, schiz vs nonschiz
 $t=2.96$ $p<.01$ schiz, TP1 vs TP3
 $t=2.75$ $p<.02$ nonschiz, TP1 vs TP3

TABLE VI

Distribution of Conceptual Overinclusion and Idiosyncratic Thinking Scores at TP1 and TP3

Diagnosis	N	Conceptual Overinclusion				Idiosyncratic Thinking			
		TP1 TP3		TP1 TP3		TP1 TP3		TP1 TP3	
		1-2		3-5		1		2-5	
Latent Schiz	15	71%	87%	29%	13%	53%	53%	47%	47%
Class Schiz	15	53	62	47	38	27	47	73	53
All Schiz	30	60	77	40	23	40	50	60	50
Char. Disord. Neur. Depr.	15	87	73	13	27	87	73	13	27
Psych. Depr.	7	86	59	14	41	57	29	43	71
All Nonschiz	22	86	67	14	33	77	59	23	41

TABLE VII

Changes in Conceptual Overinclusion Scores

Diagnosis:	All Schiz				All Nonschiz			
TP1 C.O. Score	N	↑	↔	↓	N	↑	↔	↓
1	9	4	5	-	15	10	5	-
2	8	1	5	3	4	1	3	0
3	1	0	0	1	1	0	1	0
4	6	0	0	6	2	0	1	1
5	5	-	0	5	0	-	-	-
Total N	30	5	10	15	22	11	10	1

25 schiz could go up in score, 5 did
 22 nonschiz could go up in score, 11 did

Chi square $p=.10$

21 schiz could go down in score, 15 did
 7 nonschiz could go down in score, 1 did

Chi square $p<.05$

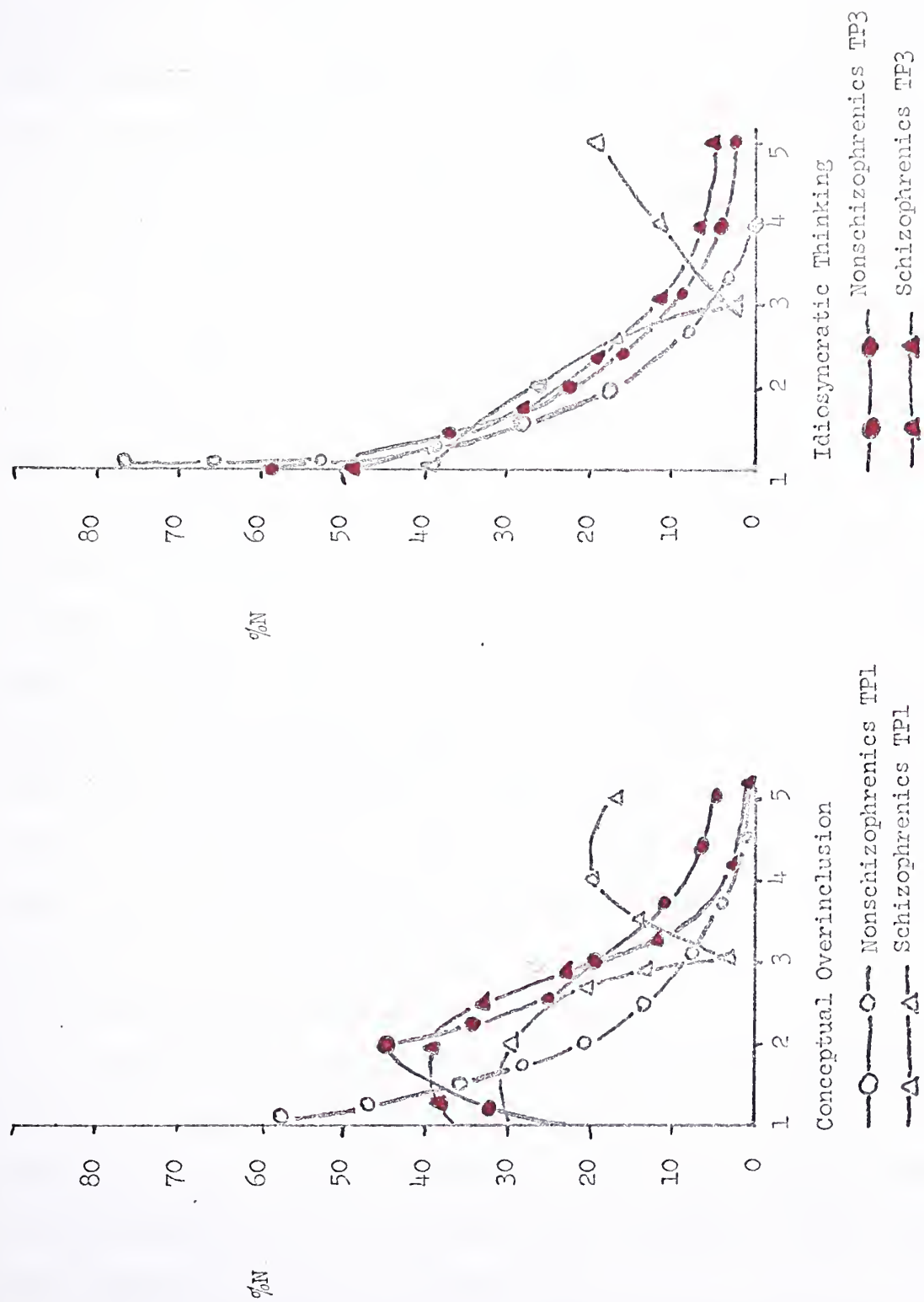


FIGURE I: Distribution of Conceptual Overinclusion and Idiosyncratic Thinking Scores at TPI and TP3

conceptually overinclusive as the latent schizophrenics. Even when the comparison of changes in conceptual overinclusion (C.O.) scores is controlled for initial C.O. scores, the schizophrenics do more to improve their scores than do the nonschizophrenics. (Table VII) Nevertheless, TP1 scores do correlate with TP3 scores at a just significant level for the total sample ($r=.28$, $p=.05$).

In an effort to determine why the schizophrenics were improving more than the nonschizophrenics, their C.O. scores were compared with their health and symptom scores. The MHS did not correlate with TP3 C.O. scores ($r=-.08$, $N=52$), but interestingly, only two of seventeen schizophrenics with a good MHS (scores of 4 or 5) were conceptually overinclusive at TP3. For the schizophrenics alone, the correlation was almost significant ($r=-.34$, $p<.10$). The nonschizophrenics were not as well "protected" by a good MHS. C.O. at TP3 was not significantly related to psychoticism, delusions, trait anxiety, or depression. TP1 C.O. scores did not correlate with the number of previous hospitalizations, nor do they predict the MHS at follow-up.

V. Idiosyncratic Thinking and Behavior

Unlike C.O., the presence of idiosyncratic thinking (I.T.) is more easily rated and is clearly (in most instances) separated from "normal" thinking. Any score greater than 1 on the GS-OST is definitely abnormal. Tables VI and VIII and Figure I summarize the results.

When the schizophrenics and nonschizophrenics are

TABLE VIII

Mean Idiosyncratic Thinking Score for the Three Time Periods

Diagnosis	TP1		TP2		TP3	
	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>
Latent Schiz	2.27	15	2.00	11	1.80	15
Classical Schiz	2.60	15	2.15	13	2.20	15
All Schiz	2.43	30	2.08	24	2.00	30
Psychotic Depr	1.57	7	1.86	5	2.29	7
Character Disord	1.13	15	1.29	7	1.53	15
Neurotic Depr						
All Nonschiz	1.27	22	1.50	12	1.77	22

t=3.28	p<.005	TP1; schiz vs nonschiz
t=0.21	p>.40	TP3; schiz vs nonschiz
t=1.61	p=.10	TP3; class schiz + psych depr vs neur depr + char disord
t=1.81	p<.10	schiz; TP1 vs TP3
t=1.62	p<.20	nonschiz; TP1 vs TP3

compared, the differences which were significant at TP1 are no longer significant at TP3. The schizophrenics were somewhat improved and the psychotic depressives were much more idiosyncratic at TP3. For the schizophrenics, I.T. tended to be a more permanent trait. From the TP1 scores, one could predict which of the schizophrenics would have more I.T. at TP3 ($r=.58$, $p<.001$). This was not true for the nonschizophrenics ($r=-.12$). For the total sample, $r=.41$.

TP3 I.T. scores did not correlate at a high level with MHS ($r=-.21$), nor for the total sample was the correlation with delusions quite significant ($r=.26$, $p<.10$). If the psychotic depressives were not included, the correlation with delusions was significant ($r=.34$, $p<.025$). TP1 I.T. scores did not predict the MHS ($r=-.17$).

VI. Stimulus Overinclusion

The nonschizophrenics were approximately equal to the schizophrenics in stimulus overinclusion (S.O.) at TP1, but the nonschizophrenics showed a marked drop in their S.O. scores at TP2 and TP3. (Table IX) The schizophrenics had almost significantly more S.O. at TP3 than did the nonschizophrenics. TP3 scores for C.O. and I.T. did not correlate at all with TP3 S.O. scores. TP1 S.O. scores were able to predict to a degree the TP3 S.O. scores ($r=.30$), more so for the nonschizophrenics ($r=.57$) than the schizophrenics ($r=.20$). Scores on the MHS correlated at a relatively high level with TP3 S.O. scores ($r=-.47$) but not with TP1 scores. There was a very strong relationship between

TABLE IX

Mean Stimulus Overinclusion Scores for the Three
Time Periods

Diagnosis	TP1		TP2		TP3	
	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>	<u>N</u>
Latent Schiz	8.33	14	7.85	13	7.07	15
Classical Schiz	9.80	15	8.28	14	7.07	15
All Schiz	9.07	29	8.07	27	7.07	30
Psychotic Depr	11.28	7	3.67	6	4.43	7
Neurotic Depr	8.80	5	5.50	4	5.14	6
Character Disord	9.74	9	4.71	7	4.34	9
All Nonschiz	10.00	21	4.28	17	4.62	22

$t=1.98$ $p < .10$ TP3, schiz vs nonschiz
 p N.S. TP1, schiz vs nonschiz
 $t=1.46$ $p < .20$ schiz, TP1 vs TP3
 $t=5.27$ $p < .001$ nonschiz, TP1 vs TP3

TP3 S.O. scores and depression.

VII. Summary of Results

A number of important relationships have been examined. To give the reader a better grasp of the results, the major relationships are summarized below.

A. Schizophrenics

1. Less behavioral overinclusion than nonschizophrenics at TP1 and TP3
2. More behavioral overinclusion at TP3 than at TP1
3. Marked decrease in rich associations
4. More conceptual overinclusion than nonschizophrenics at TP1*
5. Less conceptual overinclusion than nonschizophrenics at TP3
6. Less conceptual overinclusion at TP3 than at TP1*
7. More idiosyncratic thinking than nonschizophrenics at TP1* and TP3
8. Less idiosyncratic thinking at TP3 than at TP1 ($p < .10$)
9. Less stimulus overinclusion than nonschizophrenics at TP1
10. More stimulus overinclusion than nonschizophrenics at TP3 ($p < .10$)
11. Less stimulus overinclusion at TP3 than at TP1
12. More delusions than nonschizophrenics*
13. Less well adjusted than nonschizophrenics*

B. Nonschizophrenics

1. More behaviroal overinclusion than expected at TP1 and TP3
2. Unexpected increases in conceptual overinclusion* and idiosyncratic thinking from TP1 to TP3, especially the psychotic depressives
3. Good post-hospital health and function

C. Correlations

Variables [#] Correlated	Total Sample <u>r</u>	Schizo- phrenics <u>r</u>	Nonschizo- phrenics <u>r</u>
C01 r C03	.28*	.21	.32
C03 r MHS	-.08	-.34	
C01 r MHS	.15		.05

Variables (cont'd.)	Total Sample <u>r</u>	Schizo- phrenics <u>r</u>	Nonschizo- phrenics <u>r</u>
IT1 r IT3	.41*	.58*	-.12
IT3 r MHS	-.21	-.35	.14
IT3 r CO3	.60*		
IT1 r MHS	-.17	-.07	
IT3 r Delusions	.26		
IT3 r Delusions	.34**		
IT3 r Depression	.09		
S01 r S03	.30*	.20	.57*
S03 r CO3	.05		
S03 r IT3	.12		
S03 r MHS	-.47*	-.45*	-.36
S01 r MHS	-.10	-.04	-.38
S03 r Depression	.49*	.49*	.24
BO1 r MHS	.11		
BO3 r MHS	.11		

The number 1 stands for TP1, the number 3 represents TP3

* $p < .05$

** $p < .05$ for all subjects except the psychotic depressives

DISCUSSION

I. Methods

In any study that depends on self evaluation and subjective ratings by the investigator, there is always the risk that the data are biased. It is impossible to determine the extent to which a former psychiatric inpatient will censor his answers to present an excessively favorable or unfavorable picture. There were a few subjects who gave a clear impression of reluctance to admit to any difficulties, but the majority were quite candid. The only alternative to this approach is to collect information from third party observers, including family, employers, and psychiatrists. Besides requiring an inordinate amount of time, this last approach does not necessarily eliminate all the bias. In addition, research by others⁶³ indicates that a moderately high agreement exists between reports by the patient's relatives and reports by the patient himself when attempts are made to determine the patient's function in the community.

All possible efforts were made to eliminate investigator bias. While the subject's diagnosis was not checked before the follow-up interview, a few diagnoses were recalled from the much earlier patient selection process, and it is possible that impressions garnered during the interview or the testing process influenced the GS-OST scores. The high interrater reliability argues against this but does not prevent both raters' being influenced equally.

The MHS appeared to be a valuable measure of out-of-hospital function. There were few problems in categorizing each subject. Nevertheless, this evaluation stressed middle-class values, and a few teenagers who chose other values scored poorly because of this value judgement. One positive aspect of the MHS is that it did stress function more than symptoms, which were evaluated by the subject himself.

The symptom inventory served as a short self-evaluation form that required less time than a psychiatric evaluation and required a much lower level of expertise in the investigator. It approached symptoms as current problems rather than as personality traits as would a more formal personality index. The problems were that it required honesty, that questions were open to misinterpretation, and that there was no uniform scale of intensity for all subjects. Given that this possible compromise was necessary, the symptom inventory provided quantitative data on important symptoms. In retrospect, a major change would be to include a measure of situational anxiety such as the Multiple Affect Anxiety Check List⁶⁷ in addition to trait anxiety; the former would relate conceptually to the theories of Storm and Fish.

II. Results

A. Health at follow-up

While much is written about prognosis in schizophrenia⁶⁴,^{68,69}, there is little in the literature that reports on the post-hospitalization function of schizophrenics when compared to nonschizophrenics.^{70,71,72} Our data support the now

accepted fact that those patients with a more insidious and severe illness (classical schizophrenia) spend more time in the hospital and are less "healthy" even after discharge from psychiatric care. The latent schizophrenics, many of whom would be labeled borderline or pseudoneurotic, tend to return to a level of mental health comparable to, but less than that of nonschizophrenics. Our data also indicate that many classical schizophrenics and many latent schizophrenics are not enjoying a pleasant life outside the hospital, even though they may be functioning well enough. They are more depressed, are more deluded, and have more problems with "crazy" thoughts than the nonschizophrenics. The depression and anxiety may result from the helplessness of having to deal with these "crazy" thoughts. These patients have been helped over their acute break but have by no means been cured.

The neurotic depressives and character disorders performed as expected with a better average MHS and fewer symptoms. The psychotic depressives were quite well adjusted and admitted to few symptoms. This suggests that because of their greater age or because of more effective medication, they can prevent their illness from affecting their socialization. As discussed below, these two factors have not prevented them from showing significant increases in conceptual overinclusion or in idiosyncratic thinking.

B. Thought Disorder

One possible way of defining overinclusion is to equate it with the total number of objects sorted on the GS-OST, and

this is the technique that Payne has used. For our sample, the total number of objects sorted did not differentiate the group of schizophrenics from nonschizophrenics, nor did it relate to mental health at follow-up. There were no apparent relationships to any symptoms. Harrow found schizophrenics to be significantly more behaviorally overinclusive than nonschizophrenics but only when their sample was very large ($N > 100$). It is worthwhile noting that five nonschizophrenics (23%) sorted over 120 objects and only one of the other nonschizophrenics sorted more than 50 objects. Of the schizophrenics, four (13%) sorted more than 100 objects and three (10%) sorted more than 55 objects. This particular distribution may account for some of the unexpectedly high behavioral overinclusion scores from the nonschizophrenics. Payne³¹ described the GS-OST total as being a good prognostic sign in that high scores were associated with an acute illness and low scores indicated chronicity. Meadow,⁷⁴ however, using the GS-OST, found "looseness of associations" to be associated with a poor prognosis. The discrepancy of our data from Payne's is not surprising. Payne tested "acute" and "chronic" schizophrenics rather than one sample in the acute and nonacute stages. His chronic schizophrenics probably had variable degrees of retardation and even organic brain syndrome symptoms; this would lead to reduced GS-OST totals. The total number of objects sorted is actually a measure of overinclusive behavior and is quite different from overinclusive thinking. Behavioral overinclusion is a function of many

factors, not the least of which are anxiety, interest, richness of experience, concreteness, and overinclusive thinking. Behavioral overinclusion appears to be an inadequate measure of a thought disorder.

Conceptual overinclusion is a symptom of the acute schizophrenic breakdown and not a cause. Stress is most likely a factor influencing the acute illness scores on conceptual overinclusion.^{58,75} The distribution of these scores indicates that there are two populations of schizophrenics during the acute stage. The high scoring schizophrenics may be those who are uniquely affected by their illness, just as some experience hallucinations while others do not. At follow-up there is no longer a bimodal distribution of conceptual overinclusion scores. The decrease in conceptual overinclusion has already begun by the seventh week of hospitalization. Lewinson and Nichols⁷⁶ also found that changes in performance on a wide range of psychological tests occurred before discharge and not after. Since 40% of the schizophrenics and only 14% of the nonschizophrenics were conceptually overinclusive, conceptual overinclusion appears to be a useful diagnostic tool at Time Period One; nevertheless, it has no relation to prognosis or chronicity as measured by the total number of hospitalizations or by follow-up function.

The nonschizophrenics' increase in conceptual overinclusion can be explained best, perhaps, as a result of two phenomena. The nonschizophrenics, being more intact and in touch with social expectations at the time of acute hospital-

ization, may be reluctant to expose themselves to psychiatric scrutiny. As a result, when presented with an obvious psychological test, they are careful to restrict their associations to simple, obvious, even trite, ones. This group, in spite of their intactness, have fewer rich associations than do the schizophrenics. Once free from any possible "punishment" (longer hospital stay, restriction to the ward, etc) for abnormal behavior, the former patient may perform more naturally and more overinclusively.

The second problem is with the inevitable tendency, as his experience accrues, for the scorer to change his scoring habits. The most effective method of preventing any "drift" in scoring criteria is to score all tests at one time. A verbatim record of all conversation and actions as well as a list of the objects sorted during the test situation could be scored at any time by one or more persons.

It was noted after the study began that in either time period the group who scored a 1 in conceptual overinclusion included subjects with a wide range of abstracting power and conceptual ability. There is probably a normal distribution of conceptual ability when evaluated for "inclusion". On one end of the distribution are those persons who are conceptually overinclusive. On the other end are those that are conceptually underinclusive. This latter group of people fail to see any possible sortings for a starting object, fail to complete the category they select, and use repeatedly the same dimension for many of their categories. In the middle of this

distribution are the conceptually normal subjects who vary their categories, complete their categories and give clear logical definitions of their concepts. Schizophrenics tended to be normal or overinclusive and rarely underinclusive, while the nonschizophrenics tended to be normal or underinclusive, with some overinclusion. Possibly, if each subject were given a lower score for underinclusive behavior, for example a -1 or a 0 instead of a 1, then the mean overinclusion score for nonschizophrenics might fall more than would the mean overinclusion score for schizophrenics. This might lead to more significantly different mean scores.

Idiosyncratic thinking was only slightly more useful than conceptual overinclusion as a diagnostic and prognostic tool. The distribution of idiosyncratic thinking scores reveals the same double population during the acute illness. These are the same subjects who had high conceptual overinclusion scores at Time Period One. Idiosyncratic thinking tended to be more stable with time but could not consistently be ascribed to schizophrenia or psychosis. It did tend to relate to delusions as would be expected. One might hypothesize that people who have delusions (beliefs that are unique to the believer) also have other ideas and areas of behavior which are idiosyncratic.

Idiosyncratic thinking and conceptual overinclusion are very closely related by definition, and the high empirical correlation ($r=.60$) is expected. The greater stability of idiosyncratic thinking may be due to it being a way of thinking

contrasted to conceptual overinclusion being a way of communicating (i.e., leaving out connecting links, being vague). One can imagine a person who enters the hospital and who thinks idiosyncratically and communicates overinclusively. While in the hospital he learns that only certain ways of thinking and communicating are correct, but if he communicates properly, then no one can determine what he is thinking. At discharge, his conceptual overinclusion is gone (he has learned to communicate) but his idiosyncratic thinking remains. One can also hypothesize that nonschizophrenics are intact enough to "learn the rules" quite early in their hospitalization.

Considering the presence of a trend for delusions and idiosyncratic thinking to be associated, there may be a process more basic to idiosyncratic thinking that may be producing both delusions and idiosyncratic thinking. A popular term is "disorganization".^{73,77} The disorganization would be operating largely during the acute stage but would require varying periods of time to disappear. There is a trend for idiosyncratic thinking to be negatively related to the MHS. Disorganization, a result of conflicting social pressures, submerged yet active "psychic tensions", perceptual overload, or as yet undetermined processes, may promote irrational beliefs (delusions), behavior, and thinking (idiosyncratic thinking).

The preliminary data for stimulus overinclusion suggests that it is an independent perceptual pattern, not related to

conceptual overinclusion or behavioral overinclusion. At Time Period One, stimulus overinclusion was neither a good prognostic tool, since all groups were equally overinclusive, nor a good prognostic tool. The initial stimulus overinclusion scores bore only a small relationship to follow-up MHS. Remarkably, the nonschizophrenics reduce their scores by the seventh week of hospitalization, yet the schizophrenics are no less overinclusive at follow-up than initially. This is strong evidence that stimulus overinclusion can result from more than one cause but for schizophrenia it may be a more permanent perceptual handicap. It is significant that there is a large negative relationship between follow-up stimulus overinclusion scores and MHS and a large positive relationship between these scores and depression. An interesting conclusion is that continued distorted perception interferes with social adjustment. The unfortunate person must expend too much energy just to manipulate the large amount of perceived stimuli and less able to attend to the necessary tasks of completing a job, forming a stable personal relationship, or having a good time. This in of itself may lead to depression, but alternatively, since depression may be related to situational anxiety^b, the anxiety may be a cause of the increased amount of stimulus overinclusion. This would support the theories of Storm and Fish.

b Empirical data from 148 psychiatric inpatients indicates that depression is highly correlated ($r=.52$) with anxiety as measured by the Multiple Affect Anxiety Check List.

The best prognostic tool of all is the diagnosis. Having acquired the diagnosis of schizophrenia, a person has a significantly greater chance of performing marginally outside of the hospital. Almost one-half of the schizophrenics had a MHS score of 3 or less, yet only one-seventh of the non-schizophrenics did so poorly. What is the psychiatrist measuring that predicts so well, while most psychometric tests to date have failed to define good prognostic factors? The hallmark of schizophrenia is, of course, the thought disorder; but other findings include symbolic behavior, thought and speech; perceptual disorders; delusions; hallucinations; disorders of verbal behavior; and changes in affect.⁷⁸ Perhaps most pointedly is Lehmann's⁷⁸ statement that "almost without exception, schizophrenic patients are characterized by social withdrawal, by the emotional distance one experiences in their presence, and by the lack of capacity for establishing rapport with others." The great predicting ability of the diagnosis results from its selection of people who already have trouble functioning in society. Just as prior achievement predicts subsequent achievement, so does prior failure predict subsequent failure.

In summary, our data cannot support the hypothesis that overinclusive thinking is a basic defect in schizophrenia. It does suggest that both it and idiosyncratic thinking are symptoms of the acute disorganization of the schizophrenic illness and could serve as useful diagnostic, but not prognostic, tools. The hypothesis that conceptual overinclusion

and stimulus overinclusion are different behavioral representations of one central nervous system defect is also not supported, but neither is it contradicted. Stimulus overinclusion, unlike conceptual overinclusion, is not useful for diagnosis or prognosis but may be useful in following the course of all illnesses. Nonschizophrenics would be expected to show less stimulus overinclusion by the time of discharge, but schizophrenics would probably never return to normal levels of stimulus overinclusion. Our data could support the theory that anxiety leads to increased levels of stimulus overinclusion as predicted by Fish and by Storm and Broen.

SUMMARY

The most widely accepted primary symptom of schizophrenia is a thought disorder. One of the currently popular definitions of thought disorder is overinclusive thinking. Overinclusive thinking may be defined as the incapacity for selecting, restricting, and eliminating. Normal well-bounded perceptual and thought patterns are overwhelmed by unrelated material. Experience to date in previous research by others has shown that not all schizophrenics are overinclusive nor is overinclusion found only in schizophrenics. While no follow-up studies have been done, experience with "symptom-free" and chronic schizophrenics has suggested that overinclusion is present only during the acute illness and is probably a good prognostic sign.

Some writers have suggested that overinclusive thinking can result from conceptual overinclusion or from perceptual overinclusion. The latter is known as stimulus overinclusion and represents the inability to "filter" excessive external stimuli.

An attempt has been made to relate the conceptual definition of overinclusive thinking to both behavioral and physiologic models.

The present study is designed to measure the permanency of overinclusion scores (based on quantitative and quantitative aspects of the subject's sorting performance) on the Goldstein-Scheerer Object Sorting Test. Thirty latent and classical schizophrenics are compared to twenty-two psychotic

depressives, neurotic depressives, and character disorders. Each subject was studied during two time periods, the first ten days of hospitalization and after at least six months out of the hospital. At follow-up, each subject was evaluated for level of symptoms and a Mental Health Status, including work, social, and interpersonal function.

The results show that the object sorting total is not a useful measure of a thought disorder during the posthospital or postpsychotic period of schizophrenics and nonschizophrenics. Conceptual overinclusion is found primarily in the acute stage of the schizophrenic illness. Neither the nonschizophrenics nor the schizophrenics have high levels of conceptual overinclusion at follow-up (mean conceptual overinclusion scores of 2.27 and 1.90 respectively). Conceptual overinclusion at either time period does not correlate with Mental Health Status at follow-up, delusions at follow-up, or the total number of hospitalizations, all of which suggests that conceptual overinclusion is not related to prognosis. Another test measure, idiosyncratic thinking (bizarre, personalized behavior and thinking) tends to be more stable and is mildly related to delusions. A measure of stimulus overinclusion shows a reasonably fixed level of stimulus overinclusion for the schizophrenics but a drastic reduction of scores from nonschizophrenics. Follow-up stimulus overinclusion correlates at a significant level with Mental Health Status and depression.

The findings are interpreted to show that both conceptual overinclusion and idiosyncratic thinking are symptoms of the

acute illness, probably secondary to a disorganizing process. The disorganization could itself come from conflicting social pressures, "psychic tensions", perceptual overload, or as yet undetermined processes. Stimulus overinclusion may be a more permanent disorder in many of the schizophrenics and more a function of anxiety than perceptual disorder in non-schizophrenics.

The most useful predicting measure is diagnosis. It predicts significant differences in posthospital function between the schizophrenics and the nonschizophrenics. This is attributed to the characteristic social withdrawal that appears to be the hallmark of schizophrenia. Apparently, prior social failure is prognostic of subsequent social failure in schizophrenia..

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APPENDICES

APPENDIX A

YALE-NEW HAVEN HOSPITAL

789 HOWARD AVENUE • NEW HAVEN, CONNECTICUT 06504 • TELEPHONE 562-1151



(Date)

Mr. John Doe
100 Smith Place
New Haven, Connecticut
06513

Dear Mr. Doe:

The staff of Tompkins I is conducting a study to determine how some of our former patients are doing since they left the hospital. This is an effort to evaluate the care provided by the ward and to improve this service. We would like you to help us in this study by allowing us to speak with you for about an hour and by looking over some material with us. Of course, any information obtained will be held in the strictest professional confidence.

We have arranged a tentative appointment for you on _____ at _____ on Tompkins I. We are aware that this time may be inconvenient for you and will be calling you in the near future to confirm this appointment or change it to a time or place more convenient for you.

Thank you for your attention.

Sincerely,

Kenneth L. Harkavy

Gary Tucker, M.D.
Medical Director
Tompkins I

APPENDIX B

Objects in the Goldstein-Schereer Object Sorting Test

1 red plastic apple	19 toy saw
2 red plastic dish	20 cork
3 bicycle bell	21 lock with keys
4 noisemaker (clapper)	22 toy knife
5 real cigar	23 toy fork
6 rubber cigar	24 toy spoon
7 chocolate cigar	25 fork
8 real cigarette	26 knife
9 box of candy cigarettes	27 spoon
10 pipe	28 nail in block of wood
11 box of matches	29 china dog
12 red candle	30 rubber eraser
13 white candle	31 sink stopper
14 pliers	32 red poker chip
15 screwdriver	33 yellow poker chip
16 toy hammer	34 red rubber ball
17 toy wrench	35 red paper circle
18 toy screwdriver	36 sugar cube

APPENDIX C

Extracts from the Goldstein-Schereer Object Sorting Test
Scoring Manual as Developed at Yale-New Haven Hospital

OVERINCLUSIVENESS

The most subtle instance of 'overinclusiveness' shown by our subjects was that situation where they would break a well-formed, abstract category and slip in one or two inappropriate objects. For example, one subject responded to the 'starting point' sink stopper by sorting dishes and silverware, according to the principle 'things washed in a sink.' He could not resist, however, including the apple as a final item, because it was eaten with silverware. In Shakow's terms, the patient could not maintain a set, and therefore was considered mildly overinclusive.

In other, less subtle instances, subjects would develop extremely loose and vague categorizing principles. One subject, when presented with the red paper circle selected all remaining items which were produced from trees. The consistent use of such sortings would mark a subject as highly overinclusive.

Other subjects seemed closely bound to the physical stimuli presented by a 'starting point'. Such subjects would usually construct their sortings according to these physical properties as they randomly struck their eye. Their assortments therefore consisted of many small, loosely connected subcategories. In certain extreme instances a subject would be so stimulus bound that his attention would randomly wander

from a physical property of the 'starting point' to successive properties of each new selected object. Thus, when presented with a pipe, he would select a cigarette, then a paper circle (it's paper), then a poker chip (it's circular), then a ball (it's a game). His final selection would, of course, have no earthly relationship to the 'starting point'. Vigotsky in his work Thought and Language calls such constructs 'chain complexes' and points out that it is common in children just before they develop the first evidence of true abstract conceptualization. Thus it is clear such thinking is more primitive, and we accordingly consider it more overinclusive.

IDIOSYNCRATIC THINKING

We considered as the first indication of idiosyncratic thinking the propensity to use personal experience as a sorting principle. For example, one subject selected out the cigarette and cigar to go with the 'starting point' fork, remarking that she did so because her father frequently smoked after dinner. We consider such responses mildly idiosyncratic; but this response would be considered mildly overinclusive had she simply introduced the principle of 'after dinner smoking' without mention of her father.

We scaled those sortings which were clearly based on some sort of peculiar internal logic or those lacking any logical sense whatsoever as more idiosyncratic. One subject in response to the 'starting point' red ball, selected the pliers, the clapper, the rubber cigar, and the bicycle bell, giving as a reason that they all formed part of his personal cosmogeny. He scaled out at five.

Finally, we included each subject's test behaviour in this rating. Inappropriate behaviour, strange asides, irrelevant paranoid ideation etc. were evaluated on this scale.

RICHNESS OF ASSOCIATIONS

In dealing with richness of associations we are evaluating a phenomenon which is not pathological per se. It can, however, be seen in subjects who are overinclusive or idiosyncratic or both. We feel, however, that such a category is important for it helps provide an explanation for subjects who obtain a high raw score, yet are qualitatively neither overinclusive nor idiosyncratic. Even in the face of a normal-range raw score (total number of objects sorted), there are many subjects who produce sortings which are creative and original. For example, with the pair of pliers as a 'starting point', one subject chose the bicycle bell and the clapper. When asked why, she replied that the movement of the clappers and the movement of the handle on the bicycle bell were similar to the movement used in operating the plier handles. This reply was clearly a level apart from the more usual sortings, which usually simply included other tools.

There is at times an overlap between richness of associations and overinclusiveness. This problem arises in the situation where a subject produces multiple abstract sub-categories around a given 'starting point'. Here the examiner must subjectively differentiate such well-formed, abstract sub-categories from the random, hit and miss, stimulus bound sub-categories described under the scaling system for overinclusiveness.

Frequently, people who are creative and original will show on certain sortings a tendency to use personal experience. Such subjects might then get a concomitantly higher rating on the idiosyncratic thinking scale. In such cases, however, the examiner must be careful not to be so jarred by the subject's originality that he automatically rates such sortings high on the idiosyncratic thinking scale.

As an afternote to these three subjective scales, it should be admitted that they present a special dilemma in regard to their conjoint use with Payne's raw score; i.e., which gets a higher rating for, say overinclusiveness - seven moderately overinclusive sortings, or two extremely overinclusive sortings, along with five normal ones. After much discussion, we decided to rate the two situations as pretty much the same, though there seems to be a tendency to give the latter situation a slightly higher scaling. .

A more complete description of the scoring system used is described in a detailed manual which can be obtained from Jonathan M. Himmelhoch, MD, Department of Psychiatry, Yale University School of Medicine, New Haven, Connecticut 06510

APPENDIX D

Name _____ Date _____

Marital Status: Single . _____
 Married _____ Separated _____
 Divorced _____ Widowed _____

Age _____ No. of Children _____
 No. of Brothers _____ No. of Sisters _____

Education: Years of Schooling or Highest Degree:

Yourself _____ Father _____ Mother _____ Spouse _____

Occupation: (For example: Lawyer, Machine Operator, Sales Clerk, Unskilled
 Worker, High School Teacher, Secretary)

Your usual occupation _____

Father's occupation when you were 18 years old _____

Mother's occupation when you were 18 years old _____

Spouse's usual occupation _____

A. First, we would like to ask some questions about your health.

1. Are you taking medication regularly now? Yes ____ No ____ . If yes, what are you taking?
How long have you been taking it?

2a. Have you seen any doctors or specialists for non-psychiatric conditions since leaving T-1? Yes ____ No ____ . If yes:

Type of Doctor	Why Was Advice or Treatment Sought	Date(month and year) treatment Started and Date Ended	Average No. of Monthly Visits	Would you rate this treatment (V)Very helpful (M)Moderately helpful (N)Not too helpful
a)				
b)				
c)				
d)				
e)				
f)				

2b. Have you seen anyone for psychiatric treatment or advice since leaving T-1? Yes ____ No ____ . If yes:

Name of Practitioner or Clinic or Agency	Why was Advice or Treatment Sought	Date(month and year) Treatment Started and Date Ended	Type of Treatment	Average No. of Monthly Visits	Would you rate this treatment (V)Very helpful (M)Moderately helpful (N)Not too helpful
a)					
b)					
c)					
d)					
e)					
f)					

3. Have you been hospitalized for any reason since leaving T-1? Yes_____ No_____.

If yes: (Please include all hospitalizations)

<u>Hospital</u>	<u>Dates (Month and Year) of Admission and Discharge</u>	<u>Reason for Hospitalization</u>	Did you feel
			<u>Hospitalization was</u> (V) Very Helpful (M) Moderately Helpful (N) Not too Helpful
a) _____	_____	_____	_____
b) _____	_____	_____	_____
c) _____	_____	_____	_____
d) _____	_____	_____	_____
e) _____	_____	_____	_____
f) _____	_____	_____	_____

4. Have you ever thought of returning to the hospital? Yes_____ No_____.

If yes, why didn't you return? _____

5a. In general, would you rate your present overall mental condition as: Much better than the average person's_____. A little better than the average person's_____. About the same as the average person's_____. A little worse than the average person's_____. Much worse than the average person's_____.

5b. In general, compared with your mental condition during the period about 3 years before you came to T-1, how are you now? Better now_____. About the same_____. Worse now_____.

5c. In general, compared with your mental condition just before you came to T-1, how are you now? Better now_____. About the same_____. Worse now_____.

5d. In general, compared with your mental condition shortly after you left T-1, how are you now? Better now_____. About the same_____. Worse now_____.

B. Next, we would like to ask about your work activities.

APPLIES MOSTLY TO HEADS OF HOUSEHOLDS

1. Are you employed at present? Yes _____. Full Time _____. Part Time _____.
Irregular _____. No _____. Student _____. Retired _____.

2a. What jobs have you held since leaving T-1?

<u>Job Description</u>	<u>Date Started</u>	<u>Date Left</u>	<u>Salary Per Month</u>	<u>Hours per Week</u>	<u>Reason for Leaving</u>
a) _____	_____	_____	_____	_____	_____
b) _____	_____	_____	_____	_____	_____
c) _____	_____	_____	_____	_____	_____
d) _____	_____	_____	_____	_____	_____

2b. Since leaving T-1, about how long have you been unemployed (total time in months) _____

3a. What percentage of the family income do you contribute? 100% _____. Greater than 50% _____. Less than 50% _____. 0% _____.

3b. If the above answer is not 100%, who else contributes to the household income? _____

4. During the last 3 years before coming to T-1, about how much of the time were you unemployed (total time in months)? _____

5. How do you like your present job? Are you: Very satisfied? _____. Generally satisfied? _____. Generally dissatisfied? _____.

6. How do you get along with the people you work with? Very well _____. Well _____. Fair _____. Poorly _____. Very poorly _____.

7a. In general, compared to the period about 3 years before you came to T-1, would you say that your family's standard of living: Has improved _____. Is about the same _____. Has gone down somewhat _____.

7b. In general, compared to the period right after you left T-1, would you say that your family's standard of living: Has improved _____. Is about the same _____. Has gone down somewhat _____.

8. Do you feel secure economically? Very secure _____. Generally secure _____. Generally insecure _____. Very insecure _____.

C. APPLIES MOSTLY TO WOMEN

1a. Since you left T-1, do you usually do these things?

	Usually Only by <u>Yourself</u>	Usually Others <u>Help</u>	Usually Only <u>By Others</u>	If Others Help or Do It, <u>Who Are They?</u>
a) Get breakfast for family	_____	_____	_____	_____
b) General housecleaning (such as dusting, sweeping, etc.)	_____	_____	_____	_____
c) Washing and drying laundry (either by hand or machine)	_____	_____	_____	_____
d) Ironing clothes	_____	_____	_____	_____
e) Prepare supper or dinner (for family)	_____	_____	_____	_____
f) Wash and wipe supper dishes (by hand or by machine)	_____	_____	_____	_____

1b. And do you usually do these things?

	Usually Only by <u>Yourself</u>	Usually Others <u>Help</u>	Usually Only <u>By Others</u>	If Others Help or Do It, <u>Who Are They?</u>
a) Shopping for groceries	_____	_____	_____	_____
b) Buy clothing for children	_____	_____	_____	_____
c) Drive the children to some activities (such as to movies, friends, school, etc.)	_____	_____	_____	_____
d) Have own checking account or part of a joint account	_____	_____	_____	_____
e) Buy clothing for husband	_____	_____	_____	_____

2a. Do you receive more help with your household tasks, now, as compared to the period about 3 years before you came to T-1? More Help____. About the same____. Less Help____.

2b. What functions do you receive help with now that you did not receive help with before you came to T-1? _____

3. In addition to your household duties, do you work outside the house? No____. Volunteer work____. A part-time job____. A full-time job____. Other____ (explain)_____.

4. Housewives do many different things, such as cleaning, watching TV, cooking, talking on the phone, washing, chatting with neighbors and other activities. We would like to get an idea of how you spent your last two weekdays. (Do not include Saturday or Sunday)

a) Last Weekday: Activities engaged in (include sleeping, eating, etc.)

7:00 A.M. - 9:00 A.M. _____

9:00 A.M. - 1:00 P.M. _____

1:00 P.M. - 4:00 P.M. _____

4:00 P.M. - 7:00 P.M. _____

7:00 P.M. - 12:00 A.M. _____

b) Weekday before Last: Activities engaged in (include sleeping, eating, etc.)

7:00 A.M. - 9:00 A.M. _____

9:00 A.M. - 1:00 P.M. _____

1:00 P.M. - 4:00 P.M. _____

4:00 P.M. - 7:00 P.M. _____

7:00 P.M. - 12:00 A.M. _____

5a. On the whole, how would you rate yourself as a housekeeper, at present?
Excellent____. Good____. Fair____. Poor____.

5b. How is your housekeeping compared to your early years of marriage?
Much better____. Better____. About the same____. Worse____. Much worse____.

5c. How is your housekeeping compared to the period about 3 years before you
came to T-1? Much better____. Better____. About the same____. Worse____.
Much worse____.

5d. How is your housekeeping compared to the period immediately before you came
to T-1? Much better____. Better____. About the same____. Worse____.
Much worse____.

D.

FOR STUDENTS

1a. Could you please tell us how many subjects you are now taking?

<u>Subjects</u>	<u>Number of Hours Studied last Week</u>	<u>Grade in the Last Test or Marking Period</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

1b. How much difficulty do you have studying or concentrating outside the classroom?
A great deal____. Quite a bit____. A moderate amount____. A slight amount____.
None at all_____.

1c. Compared to a year and a half before being hospitalized, how would you say
you were able to study and concentrate? Much better now____. Better
now____. Same now____. Worse now____. Much worse_____.

2a. How often do you find it hard to keep your mind on your school work?
Very often____. Often____. Sometimes____. Rarely____. Never_____.

2b. How often do you feel that you are not spending enough time in studying?
Very often____. Often____. Sometimes____. Rarely____. Never_____.

2c. How often do you feel you are isolated from your classroom? Very often____.
Often____. Sometimes____. Rarely____. Never_____.

2d. How often do you wonder whether you will flunk out of school? Very often____.
Often____. Sometimes____. Rarely____. Never_____.

2e. How often do you feel that you are not doing the work at school that you are
capable of doing? Very Often____. Often____. Sometimes____. Rarely____.
Never_____.

3a. Do you participate in any extra-curricular activities? Yes____. No____.
If yes, would you tell us about them?

<u>Activity</u>	<u>Hours/Week</u>
1)_____	_____
2)_____	_____
3)_____	_____

3b. How does this compare with your participation a year and a half before being hospitalized? Participate much more now____. Participate more now____.
Participate about the same amount now____. Participate less now____.
Participate much less now____.

3c. How do you get along with most of your classmates? Very well____. Well____.
Not too well____. Very poorly____.

3d. How do you get along with most of your teachers? Very well____. Well____.
Not too well____. Very poorly____.

E. These items will help us get some idea about your living arrangements and how you spend your spare time.

1a. Altogether, how many different places have you lived at since you left T-1 _____

1b. How do you feel about the neighborhood you live in now? Like it very much _____. Generally like it _____. Generally dislike it _____. Dislike it very much _____.

2a. Could you tell us about your different spare time activities? (Include all spare time activities, such as reading, TV, fishing, movies, bowling, visiting and having other people over, card playing, volunteer work, hobbies, sports, or any others)

Activity	Average Time Spent on it per Week	Where Activity Is Usually Carried Out	If Activity Carried Out with Others, Who Is It Usually Done With
a) _____	_____	_____	_____
b) _____	_____	_____	_____
c) _____	_____	_____	_____
d) _____	_____	_____	_____
e) _____	_____	_____	_____
f) _____	_____	_____	_____
g) _____	_____	_____	_____
h) _____	_____	_____	_____

2b. In general, how satisfied are you with your spare time activities? Highly satisfied _____. Satisfied _____. Dissatisfied _____. Highly Dissatisfied _____.

2c. Since leaving T-1, have there been any significant changes in your leisure time activities, as compared to the period of about 3 years before you came to T-1? Yes _____. No _____. If yes, could you tell us about the change? _____

3a. Do you belong to any clubs, unions, professional organizations, religious organizations or other groups? Yes _____. No _____. If yes, which ones? _____

3b. About how many meetings (of organizations you belong to) did you attend during this past month? _____

3c. Do you participate more or less in organizations now than just before you were in T-1? More _____. About the same _____. Less _____.

- a. About how often have you had friends (not relatives) over to the house during this past month? _____
- b. What are some of the things you do when your friends visit you?

- c. About how often have you visited with friends at their homes or gone out with them during this past month? _____
- a. Do you find yourself having more or fewer friends, now, as compared to the period about 3 years before you came to T-1? More _____. About the same _____. Fewer _____.
- b. Do you visit with friends more or less, now, as compared to the period about 3 years before you came to T-1? More _____. About the same _____. Less _____.
- c. Do you find yourself having more or fewer friends, now, as compared to the period just before you came to T-1? More _____. About the same _____. Less _____.
- d. Do you visit with friends more or less, now, compared to the period just before you came to T-1? More _____. About the same _____. Less _____.
- e. Do you visit your friends more or less often than most other members of your immediate family visit their friends? Visit more often _____. Visit as often as other family members _____. Visit less often _____.
- a. How do your spouse (or family members if not married) and you get along? Get along quite well _____. Get along moderately well _____. Don't get along too well _____.
- b. How do your spouse (or family members if not married) and you get along, now, compared to the period about 3 years before you came to T-1? Much better now _____. Better now _____. About the same _____. Worse now _____. Much worse now _____.
- c. How do your spouse (or family members if not married) and you get along, now, compared to the period just before you came to T-1? Much better now _____. Better now _____. About the same _____. Worse now _____. Much worse now _____.

Finally, we are interested in your overall opinions about the ward and your experience in it.

- a. What aspects of your experience on T-1 were most helpful? _____

- b. What aspects of your experience on T-1 were least helpful, or harmful? _____

- c. In what ways do you think T-1 could be improved? _____

Scoring Directions for the Structured Interview

Questions Weight Points Measurement
used

			HEALTH
			Rehospitalization
A3	4		0)Has not been rehospitalized 1)Has been rehospitalized once or twice, for psychiatric reasons and has spent a total of two months or less in hospitals since Tompkins 1 discharge 2)Has been in hospital less than half the time, for psychiatric reasons since Tompkins 1 discharge 3)Has been in hospital, for psychiatric reasons, over half the time since discharge, but has spent at least three months outside of the hospital 4)Has been in hospital, for psychiatric reasons, continuously, or almost continuously, since discharge
A5a	3		Patient's overall subjective rating of mental condition 0)Average or above 1)Little worse than average 2)Much worse than average
A5c	$\frac{1}{2}$		Health compared to just before admission 0)Better now 1) The same as or worse than then
A5d	$\frac{1}{2}$		Health compared to just after discharge 0)The same or better than then 1)Worse now
			WORK - Males
B2a,2b	3		Work regularity 0)Worked regularly since discharge 1)Worked part of the time since discharge 2)Worked not at all
B1	2		Job hours 0)Works full time 1)Works part time 2)Works none of the time
B2a	2		Job changes 0)Two or less except upward 1)Three or more, equal or downward
B3a	2		Financial responsibility (f.r.) 0)Patient has all or major share or f.r. 1)Patient has a minor share of f.r. 2)Patient has no share of the f.r.

- B5 1 Affect towards job
 0)Patient is satisfied with his present job
 1)Patient is generally dissatisfied
- B6 $\frac{1}{2}$ Relations with people at work
 0)Gets along well
 1)Gets along "fair"
 2)Gets along "poorly"
- B7a,7b 1 Standard of living
 0)Same as or better than before admission
 1)Worse than before admission
- B8 $\frac{1}{2}$ Feeling of economic security
 0)Feels secure or generally secure
 1)Feels generally insecure
 2)Feels very insecure
- C1a,1b, 3 WORK - Females
 4a,4b Activity
 0)Patient is active all or most of day
 1)Active part of day
 2)Inactive most of day
- C1a,1b 3 Participation in work
 0)Does most of household tasks or does outside work
 1)Does some household tasks
 2)Does few household tasks
- C2a,2b 2 Help required for household tasks
 0)Patient does at least a moderate number of tasks alone
 1)Patient does few tasks alone
- C5a 1 Patient's evaluation of quality of housework
 0)"excellent" or "good"
 1)"fair" or "poor"
- B6,E6a 2 Relations with people at home or work
 0)Gets along well
 1)Gets along fair
 2)Gets along poorly
- C5d 1 Changes in housework
 0)Housework better than just before admission
 1)Housework same as or worse than just before admission

- WORK - Students
Studying and Concentration
- D1a 2
- 0) Five or more subjects
 - 1) Four subjects
 - 2) Three subjects
 - 3) Two or less subjects
- D1b 2
- Difficulty Studying and Concentrating
- 0) None at all
 - 1) A slight amount
 - 2) A moderate amount
 - 3) Quite a bit or a good deal
- D3b 1
- Participation in Extra-curricular Activities
- 0) Same or more than in past
 - 1) Less than in past
- D3c 1
- Relationship with Classmates
- 0) Get along very well
 - 1) Get along "not too well"
 - 2) Get along poorly
- D3d 1
- Relationship with Teachers
- 0) Get along well or very well
 - 1) Get along "not too well"
 - 2) Get along very poorly
- D2a,b,c 1
- 2d,e
- Anxiety
- 0) None of items answered often
 - 1) One or two of items answered often
 - 2) Three of items answered often
 - 3) Four or five of items answered often
- E2a,3b 3
- 4c
- SOCIALIZATION
Activities (spare time) outside the house (Giving credit for organizations and friends also)
- 0) Engages in more than one activity outside the house with other people
 - 1) Engages in one activity outside the house with other people
 - 2) Engages in activities outside the house, but usually alone
 - 3) Seldom goes outside the house
- E3a $\frac{1}{2}$
- Organizations
- 0) Belongs to at least one
 - 1) No participation in organizations
- E3b $\frac{1}{2}$
- Organization meetings attended
- 0) Attended 3 or more meetings in past month
 - 1) Attended 1 or 2 meetings in past month
 - 2) No participation in past month

E4a,4c	2	Frequency of visits with friends
		0)Visited and was visited at least twice in previous month
		1)Visited and was visited at least once in previous month
		2)Visited or was visited at least once in previous month
		3)Neither visited nor was visited in previous month
E5e	1	Visits (with friends) compared with rest of family
		0)Visits as often or more often than rest of family
		1)Visits less often than rest of family
E6a	1	Getting along with spouse of family
		0)Gets along well
		1)Gets along moderately well
		2)Does not get along well
E1b	$\frac{1}{2}$	Satisfaction with neighborhood lives in
		0)Likes neighborhood lives in
		1)Generally dislikes neighborhood lives in
		2)Dislikes very much the neighborhood lives in
E1a	1	Mobility since discharge
		0)Has lived at 1 or 2 places since discharge
		1)Has lived at 3 or 4 places since discharge
		2)Has lived at 5 or more places since discharge
E2b	$\frac{1}{2}$	Satisfaction with spare time activities
		0)Is satisfied
		1)Is dissatisfied
		2)Is highly dissatisfied

The score for each question is determined by multiplying the number of points by the weight.
The point totals for each of the three work sections is the same.

APPENDIX E

Name _____

Date _____

Here are some conditions that doctors often hear about. Could you tell how often they apply to you.

Describes Me Does Not Describe Me

- | | | |
|-------|-------|---|
| _____ | _____ | 1. I keep my emotions under good control. |
| _____ | _____ | 2. I am a nervous person. |
| _____ | _____ | 3. My feelings are easily hurt. |
| _____ | _____ | 4. I am easily disturbed by distractions while doing mental work. |
| _____ | _____ | 5. I am easily moved to tears. |
| _____ | _____ | 6. I am easily startled by unexpected things. |
| _____ | _____ | 7. I do not keep my head in excitement. |
| _____ | _____ | 8. I am often in a state of excitement. |
| _____ | _____ | 9. I am more emotional than average. |
| _____ | _____ | 10. I get rattled easily in exciting situations. |
11. Lately when you try to pay attention to something, have you found a very great many different stimuli or events distracting you? _____ 1. Not at all. _____ 2. Once or twice. _____ 3. A number of times. _____ 4. A great many times. _____ 5. Almost all the time.
12. Have you been feeling sad or blue over the past few months? _____ 1. No, not at all. _____ 2. A little bit. _____ 3. A moderate amount. _____ 4. Quite a bit.
13. Lately when you do things that were once automatic have you had to think of your movements every second and found that it took a lot of extra energy? _____ 1. Not at all. _____ 2. Once or twice. _____ 3. A number of times. _____ 4. A great many times. _____ 5. Almost all the time.
14. There have been occasions when I took advantage of someone. 1. _____ True, 2. _____ False.
15. Lately has it been hard to focus on one thing because you found yourself distracted by every possible object, line and color within sight? _____ 1. Not at all. _____ 2. Once or twice. _____ 3. A number of times. _____ 4. A great many times. _____ 5. Almost all the time.

6. At times I have really insisted on having things my own way. 1. ☐ True, 2. ☐ False.
 7. I am always willing to admit it when I make a mistake. 1. ☐ True, 2. ☐ False.
 8. Recently have you found yourself paying attention to everything at once and as a result found that you were not really attending to anything?
☐ 1. Almost all the time. ☐ 2. A great many times. ☐ 3. A number of times. ☐ 4. Once or twice. ☐ 5. Not at all.
 9. I have never intensely disliked anyone. 1. ☐ True, 2. ☐ False.
 0. Recently have you found that background noises seem louder than the main noises you are trying to pay attention to? ☐ 1. Almost all the time. ☐ 2. A great many times. ☐ 3. A number of times. ☐ 4. Once or twice. ☐ 5. Not at all.
 1. Have you been depressed over the last few months? ☐ 1. Quite a bit. ☐ 2. A moderate amount. ☐ 3. A little bit. ☐ 4. No, not at all.
 2. Recently have you found yourself paying attention to the silliest little things going on around you and wasted a lot of energy that way?
☐ 1. Almost all the time. ☐ 2. A great many times. ☐ 3. A number of times. ☐ 4. Once or twice. ☐ 5. Not at all.
-
- | <u>es</u> | <u>No</u> |
|--------------------------|---|
| ☐ | 1. Do you feel somewhat apart even among your friends? |
| ☐ | 2. Are you an unworthy person in your own eyes? |
| ☐ | 3. Is someone trying to poison you or make you ill in some way? |
| ☐ | 4. Is someone, other than yourself, deliberately causing most of your troubles? |
| ☐ | 5. A person has moments when he feels he is a stranger to himself. |
| ☐ | 6. Are you worried about having said things that have injured others? |
| ☐ | 7. Have you some bodily condition which you find disgusting? |
| ☐ | 8. Have you found that objects take on the characteristics of other objects nearby? |
| ☐ | 9. Have you some special power, ability or influence which is not recognized by other people? |
| ☐ | 10. Do you often feel puzzled, as if something has gone wrong either with you or with the world, without knowing just what it is? |
| ☐ | 11. Do you ever hear voices without knowing where they come from? |
| ☐ | 12. Are people plotting against you through no fault of your own? |
| ☐ | 13. To avoid arguments do you usually keep your opinions to yourself? |

3.

Yes

No

14. Because of things you have done wrong, are people talking about you and criticizing you?
15. Do you think other people regard you as very odd?
16. Do you have very strange and peculiar thoughts at times?
17. Do you ever see someone do or say something which most people do not take much notice of, but which you know has a special meaning?
18. When you go out, do you usually prefer to go by yourself?
19. Do you ever have very strange and peculiar experiences?
20. Are there people who are trying to harm you through no fault of your own?
21. Is there something unusual about your body - like one side being different from the other and meaning something different?
22. Have you an important mission to carry out?
23. Are you a condemned person because of your sins?
24. Can people read your thoughts and make you do things against your will by a sort of hypnotism?
25. When thinking about one idea, do you find other ideas intruding on your thoughts?
26. Do you ever see visions, or people, animals or things around you that other people don't seem to see?
27. Do you often wonder who you really are?
28. Are you a much more important person than most people seem to think?
29. Are there times when you feel anxious without knowing the reason?
30. Do you cause harm to people because of what you are?

Scoring and Derivation of the Symptom Inventory

Emotionality (Freeman and Simmons)⁶³ - A1,3,5,7,9
one point for each "describes me"

Nervousness (Freeman and Simmons)⁶³ - A2,4,6,8,10
one point for each "describes me"

Withdrawal (Freeman and Simmons)⁶³ - B1,5,13,18
one point for each "yes"

Stimulus Overinclusion (Tucker et al)⁴⁴ - A11,13,15,18,20,22
from no points for "not at all" to four points for
Almost all the time

Depression - A12,21
from no points for "not at all" to three points for
"quite a bit"

Overinclusive thinking - B8,25
one point for a "yes"

Psychotic vs. Neurotic Scale (Foulds and Hope)⁶⁶ -
B6,9,10,11,14,15,16,17,19,20,21,22,23,24,26,27,28,
29(scored negatively),30
one point for each "yes"

Delusional Scale (Foulds and Hope)⁶⁶ - B2,3,4,7,9,11,12,14,16,
19,21,22,23,24,26,27,28,30
one point for each "yes"

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